

S/080/62/035/010/006/012
0204/0307

AUTHORS: Mamfilov, A.V. and Mel'nik, P.M.
TITLE: The effects of additives on the internal stresses
in electrolytic nickel coatings
PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 10, 1962,
2272-2275

TEXT: The internal stresses were measured in 10 thick
Ni coatings deposited from (A) $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$ -245, NaCl-5, H_3BO_3 -30,
(B) $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$ -200, $\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$ -150, H_3BO_3 -30, NaCl-5, NaF-5,
(C) $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$ -293, $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ -12, H_3BO_3 -30, (D) $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$ -200,
 $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ -15, H_3BO_3 -30, the concentrations being in g/l. At pH
4 and 20 - 40°C, the stresses passed through a minimum when the cur-
rent density (D) was ~ 1.5 - 2 a/dm²; under these conditions luster-
promoting Zn and particularly Cd salts increased the internal con-
traction stresses, when added in amounts of 0-3 g/l. At 25°C, pH

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J/080/62/035/010/006/012
D204/D307

The effects of additives ...

4 and 5 = 1 a/dm², the stresses increased with increasing concentration of Cd and Zn, to a maximum of ~ 3850 kg/cm² with bath (a) containing ~ 0.7 g Cd or ~ 2.5 g Zn per liter. Fracture and peeling of the coatings occurred when 0.6 and 3 g/l of Cd and Zn respectively were added to the bath. In the absence of additives the stresses were decreased at higher temperatures and fell linearly with decreasing D. The effects were also studied of (1) aniline sulphate, (2) anisidine sulphate, (3) the Na salt of diphenylamine sulphonic acid, (4) sulphamic acid, (5) disulphonaphthoic acid with quinoline, and (6) various sulphamides. Additives (1) and (2) (0.1 to 0.7 - 1 g/l) gave rise to dull, very highly stressed coatings. Lustre deposits were obtained, at 25°C, pH 4 and 1 a/dm², in the presence of red streptocid and norsulphazol. [abstracter's note: Compounds unfamiliar] and particularly with norsulphazol with quinoline, added in quantities of 0.1, 0.2 and 0.025 g/l respectively, with stresses of the order of 3000 kg/cm²; slight stress reduction was observed with (5) and (4), the luster being poor. Additives (5), albucid, and chloramine B (at ~ 0.5 - 4 a/dm², 25°C, with bath (b)) tended to reverse the initial expansion stresses.

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The effects of additives ...

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D204/D307

into various sizes of construction, as λ was increased; these coatings showed a good luster. The results are discussed. There are 6 figures.

ASSOCIATION: Кафедра физической химии Черновитского университета (Department of Physical Chemistry, Chernovtsy University)

SUBMITTED: July 3, 1961

Card 3/3

S/073/62/28/003/02/01:
A057/A:26

AUTHORS: Pamfilov, A. V., Mazurkevich, Ya. I.

TITLE: The photocatalytic activity of cadmium sulfide

PERIODICAL: Ukrainskiy khimicheskii zhurnal, v. 28, no. 9, 1962, 1014 - 1016

TEXT: The effect of preparing and thermally pre-treating cadmium sulfide, the effect of admixtures (W, Ag, Cu) upon its activity as catalyst in the photosynthesis of hydrogen peroxide, and the photoreduction of methylene blue by formaldehyde were studied in the Chernovitskiy gosudarstvennyy universitet (Chernovits State University). Also the photocatalytic activity of some zinc sulfide samples was investigated. The activity was determined by a previously described method and the photo-emf measured by the condenser method. A considerable effect of the preparation method upon the catalytic activity of CdS was observed. Highest activity showed CdS prepared from CdCl₂. Also the introduction of halogens increases the activity of CdS. The effect rises in the sequence J - Br - Cl. Preheating of CdS to 400 - 700°C in a thoroughly purified nitrogen atmosphere improves also the catalytic activity. The authors state that, contrary

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The photocatalytic activity of cadmium sulfide

0/073/62/028/001/002/11
A057/A126

to the opinion of R. E. Stephens et al. (J. Phys. Chem., v. 59, 1955, 465) an increase in excess Cd effected by heating or by the resulting loss of sulphur, causes a rise in the activity, since the Cd atoms play the role of active centers. Also admixtures of metals (W, Ag, Cu) increase the catalytic activity of CdS. Maximum activity showed CdS containing 0.002 - 0.003 at.% of metal admixture. The effect rises in the sequence Cu - Ag - W. The simultaneous change of the photo-emf with the photocatalytic activity of CdS is stipulated by the electronic state of its surface. Experiments with ZnS catalysts showed a very low activity of the latter and a drop in activity effected by metal admixtures. There are 6 tables.

ASSOCIATION: Chernovitskiy gosudarstvennyy universitet (Chernovits State University)

SUBMITTED: July 12, 1961

Card 2/2

PAMFILOV, A.V.; DOUGAYA, G.N.

Conformational transformations of polymethacrylic acid.
Zh. fiz. khim. 4 no.4:617 Apr 68. (MIRA 15:5)
(Methacrylic acid) (Macromolecular compounds)

PAMFILOV, A.V.; KUZUB, V.S.

G

Absorption phenomena and the electrodeposition of cadmium.
Ukr.khim.zhur. 28 no.8:939-944 '62. (MIRA 15:11)

1. Chernovitskiy gosudarstvennyy universitet.
(Cadmium plating)
(Absorption)

PAMFILOV, A.V.; KUZUB, V.S.

Absorption phenomena and the electrodeposition of cadmium.
Ukr.khim.shur. 28 no.8:939-944 '62. (MIRA 15:11)

1. Chernovitskiy gosudarstvennyy universitet.
(Cadmium plating)
(Absorption)

PAMFILOV, A.Y.; KUZUB, V.S.

Particular features of the adsorption of aromatic compounds
on cadmium and mercury electrodes. Ukr.khim.zhur. 28
no.4:528-530 '62. (MIRA 15:8)

1. Chernovitskiy gosudarstvennyy universitet.
(Aromatic compounds) (Electrodes) (Adsorption)

PAMFILOV, A.V.; DILCAYA, M.

Surface diffusion in the air oxidation of SO₂ on Pt.
fiz. khim. 36 no. 6:1313-1316 1962

1. Chemically active sites.

PAMFILOV, A.V.; LOPUSHANSKAYA, A.I.; BALTER, A.M.

Irreversible processes in polarography. Chromium nitrate.
Zhur. fiz. khim. 36 no.11:2481-2486 N'62. (MIRA 17:5)

1. Chernovitskiy universitet.

DRUTMAN, Z.S.; IAMPILOV, A.V., prof., reisenzent; KRAVETS, I.P.,
prof., reisenzent; SIVEN, F.Ya., dots., reisenzent;
GRITSENKO, A.F., dots., reisenzent; KOSTYAEV, A.I., prof.,
reisenzent; KOTLYANOV, Yu.L., red.

[Structure of molecules] Stroenie molekul. L'vov, Izi-vo
L'vovskogo univ., 1962. 213 p. (MI A 18:6)

PAMFILOV, A.V.; LOPUSHANSKAYA, A.I. [Lopushans'ka, O.I.]; BALTER, A.M.

Thermodynamics of irreversible processes applied to the polarography of chromium nitrate. Dop. AN URSS no.4:497-500 '62.

(MIRA 15:5)

1. Chernovitskiy gosudarstvennyy universitet. Predstavleno akademikom AN USSR Yu.K.Delimarskim [Delimars'kyi, IU.K.].
(Chromium nitrate) (Polarography)

PAMFILOV, A.V.; LOPUSHANSKAYA, A.I.; TSISAR', I.A.

Electrolytic reduction of chromium complex salts. Ukr.khim.zhur. 29 no.3:
293-299 '63. (MIRA 16:4)

1. Chernovitskiy gosudarstvennyy universitet.
(Chromium compounds) (Reduction, Electrolytic)

PAMFILOV, A.V.; LOPUSHANSKAYA, A.I.; SUYEVA, T.S.

Polarography of oxalate complexes of chromium (III). *Ukr.khim.zhurn.* 29
no. 3:299-302 '63. (MIRA 16:4)

1. Chernovitskiy gosudarstvennyy universitet.
(Chromium compounds) (Polarography)

PAMFILOV, A.V.; MAZURKEVICH, Ya.S.; NOVAL'KOVSKIY, N.P.

Relation between the photocatalytic activity of zinc oxide
and titanium dioxide and the breakdown of film containing
these pigments. *Lakokras.mat.i kh prim.* no.1:23-26 '63.
(MIRA 16:2)

(Pigments)
(Photochemistry)

PAMFILOV, A.V.; LOPUSI ANSKAYA, A. I.; BALTER, A.M.

Reversible processes in electrochemistry. Zhur.fiz.khim. 37 no.7:1481-1488 J1 '63. (MIRA 17:2)

1. Chernovitskiy gosudarstvennyy universitet.

LOPUSHANSKAYA, A.I.; PAMFILOV, A.V.; TSISAR', I.A.

Irreversible processes in electrochemistry. Part 4: Determination of
phenomenological coefficients in the system electrode - solution.
Zhur.fiz.khim. 37 no.10:2207-2213 0 '63. (MIRA 17:2)

1. Chernovitskiy universitet.

PAMFILOV, A.V.; SKAKUN, Ye.G.

Potentiostat for kinetic studies. Zhur. fiz. khim. 37 no.11:
2603-2605 N'63. (MIRA 17:2)

1. Kafedra fizicheskoy khimii Chernovitskogo universiteta.

PAKFIKOV, A. V.; LOPSHANSKAYA, A. I.; BALTER, A. M.

Irreversible processes in electrochemistry. Part 2. Zhur. fiz.
khim. 37 no. 3:615-621 Mr '63. (MIRA 17:5)

1. Kafedra fizicheskoy khimii Chernovitskogo universiteta.

ACCESSION NR: AP4011974

S/0073/64/030/001/0043/0048

AUTHORS: Pamfilov, A.V.; Mazurkevich, Ya. S.

TITLE: Photocatalysis and surface properties

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 30, no. 1, 1964, 43-48

TOPIC TAGS: photocatalysis, zinc oxide, titanium oxide, catalytic properties, heat treatment, surface properties, specific activity

ABSTRACT: The photocatalytic activity of zinc and titanium oxides, per unit surface, changes depending on the atmosphere and temperature of their preliminary treatment. The conclusions about specific activity set forth by G.K. Borekov (Sb. Heterogeneous catalysis in the Chemical industry, GKhI, M, 1955, atr.5) do not apply to the photocatalytic reactions studied herein. The activity of ZnO and TiO₂ in photochemical reduction of dyes or formation of H₂O₂ is reduced on calcining in air at 900C. Increasing temperature of heating in air significantly decreases specific surface of TiO₂. Thermal

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ACCESSION NR: AP4011974

treatment in inert (nitrogen) or reducing (hydrogen) medium increases the photocatalytic activity. In the case of ZnO, there is no increase in activity after heat treatment in inert or reducing atmosphere probably due to the reduction of the ZnO to the metal above 500C. Orig. art. has: 4 figures and 2 tables.

ASSOCIATION: Chernovitskiy gosudarstvennyy universitet
(Chernovitsk State University)

SUBMITTED: 27Jul62

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: PH, MA

NO REF SOV: 011

OTHER: 003

Card 2/2

PAMFILOV, A.V.; LOPUSHANSKAYA, A.I.; BELAYA, A.M.

Spectrophotometric study of chromium sulfate solutions. Ukr.
khim.zhur. 30 no.2:173-177 '64. (MIRA 17:4)

1. Chernovitskiy gosudarstvennyy universitet.

LOPUSHANSKAYA, A.I.; PAMFILOV, A.V.; TSISAR', I.A. (Chernovtsy)

Irreversible processes in electrochemistry. Part 5. Dokl. Akad. Nauk
khim. 38 no.3:650-657. 1964. (MIRA 12 72)

1. Kafedra fizicheskoy khimii Chernovitskogo gos. univ.

PAPIIAD, P.W.; LOPUSHANSKYA, A.I.; EL'YINA, N.B.

Spectroscopic study of (aromatic) heterocyclic compounds
in solution (III). *Ukr. Khim. Zh.* 1964, 40, 114
(1964, 10:)

1. Chem. Abstr. 59:114 (1964).

PAMFLO, A.V., 1970, 1971, 1972.

Thermodynamic of reversible processes and electrochemistry.
MIRA 1811.

MIRA 1811)

1. Department of Chemistry, University.

IVANCHEVA, Ye.G.; NOVAL'KOVSKIY, N.P.; PAMFILOV, A.V.

Degradation of melamine-formaldehyde resins. Ukr. khim. zhur. 30
no. 6:571-575, 1964. (MIRA 18:5)

1. chernovitskiy gosudarstvennyy universitet.

L 1716-66 EWT(m)/EPF(c)/ENP(t)/EAP(b) IJP(c) JD

ACCESSION NR: AP8020951

UR/0073/65/031/006/0768/0771

AUTHOR: Pamfilov, A. V. ; Bondar', P. G. ; Mazurkevich, Ya. S.

24
23
B

TITLE: Effect of modification on the energy required for removing an electron from titanium dioxide

SOURCE: Ukrainskiy khimichesky zhurnal, v. 31, no. 8, 1965, 768-771

TOPIC TAGS: titanium dioxide, aluminum hydroxide, paint, catalysis, electron removal, electric potential, electromotive force

ABSTRACT: The work deals with changes in contact difference of TiO_2 potentials upon introducing admixtures under conditions corresponding to those for the catalytic synthesis of hydrogen peroxide. Iron, copper, gold, and molybdenum were added as $FeSO_4$, $CuSO_4$, $AgNO_3$ and H_2MoO_4 under subsequent heating to 500 C maintained for 24 hours. The contact differences of potentials were measured by the Kelvin method on specimens previously processed under vacuum at 60 C for 1 hour. A table shows the difference in TiO_2 potentials under vacuum at room temperature for all admixtures, varying from 0.0003 to 0.3 at%. Decrease in the potential of the TiO_2 surface upon soaking it in low concentrations of iron
Card 1/2

L 1736-66

ACCESSION NR: AP5020951

or molybdenum salts was apparently related to the formation of a solid solution in the surface layer. Due to the closely approximating size of the Fe^{+3} and Ti^{+4} radii, higher concentration should lead to substitution and a decrease in the concentration of free electrons, and therefore greater energy for removing an electron from TiO_2 and an increase in potential. This was confirmed. Maximal speed of catalytic reaction corresponded to a certain electric potential of the surface, so that TiO_2 was a good photocatalyst only at certain admixture concentrations. Both the nature and purity of the admixed substance were important. Thus small admixtures decrease the energy required, while large additions increase it. Modification of TiO_2 with $Al(OH)_3$ led to considerable increase of the work required for removing an electron ($\Delta\varphi = +374$ ma) and a two-fold increase of surface stability in air. Orig. art. has: 1 table and 2 figures

ASSOCIATION: Chernovitskiy gosudarstvennyy universitet (Chernovits State University)

SUBMITTED: 04Apr64**ENCL: 00****SUB CODE: IC, GC****NR REF SOV: 007****OTHER: 005**

Card 2/2

L 2003-66 EWT(1)/EWT(m)/EPF(c)/EPA(w)-2/T/ENP(t)/ENP(b)/ENA(m)-2/ENA(h) IJP(c)

JD/AT
ACCESSION NR: AP5023967

UR/0073/65/031/009/0918/0923
546.821+537.533.2

AUTHOR: Pamfilov, A. V.; Mazurkevich, Ya. S.; Bondar', P. G.

TITLE: Effect of illumination on electron work function from titanium dioxide

SOURCE: Ukrainskiy khimicheskiy zhurnal, v. 31, no. 9, 1965, 918-923

TOPIC TAGS: UV irradiation, work function, electron mobility, semiconductor research, titanium dioxide

ABSTRACT: The effect of UV illumination on electron work function from titanium dioxide at various O₂ and H₂O partial pressures was studied by means of contact potential difference technique. Before each test, the TiO₂ samples were activated for 1 hour at 50°C and 10⁻³ mm Hg. The electron work function from titanium dioxide depends upon the surface condition. For clean TiO₂ samples the UV illumination is reflected in reduced electron work function due to photodesorption. The effect of UV illumination on contact potential difference of TiO₂ is shown in fig. 1 of the Enclosure. The kinetics of decline and build-up of the contact potential difference due to UV switch on and off at P_{O₂}=P_{H₂O}=8mm Hg is shown in fig. 2 of the

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L 2003-66

ACCESSION NR: AP5029967

Enclosure. The effect of UV illumination on the contact potential difference of TiO_2 at $P_{O_2}=10^{-4}$ mm Hg is shown in fig. 3 of the Enclosure, where: 1 is for rutile "malarin", 2 is rutile "malarin" cleaned with HCl. For TiO_2 surfaces covered with sulfates, the UV illumination is reflected in increased electron work function due to photosorption of oxygen. Orig. art. has: 1 table, 5 figures.

ASSOCIATION: Chernovitskiy gosudarstvennyy universitet (Chernovtsy State University)

44.55
SUBMITTED: 29Apr64

ENCL: 03

SUB CODE: IC, GC, SS, OP

NO REF SOV: 005

OTHER: 006

Card 2/5

I. 2003-66

ACCESSION NR: AP5023967

ENCLOSURE: 01

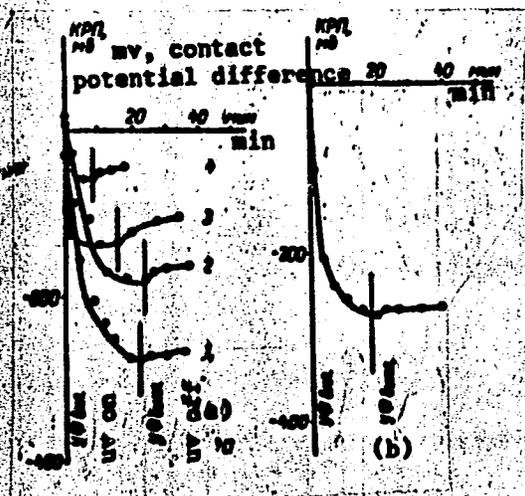


Fig. 1. (a): 1 and 3--rutile "malarin", 2--untreated rutile, 4--ZnO; 1, 2, and 4-- $p_{O_2}=10^{-4}$ mm Hg.

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L 2003-66

ACCESSION NR: AP5023967

ENCLOSURE: 02

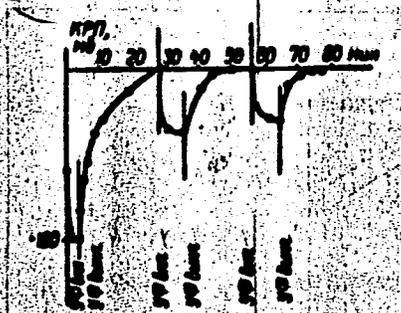


Fig. 2.

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L. 2003-66

ACCESSION NR: AP5023967

ENCLOSURE: 03

0

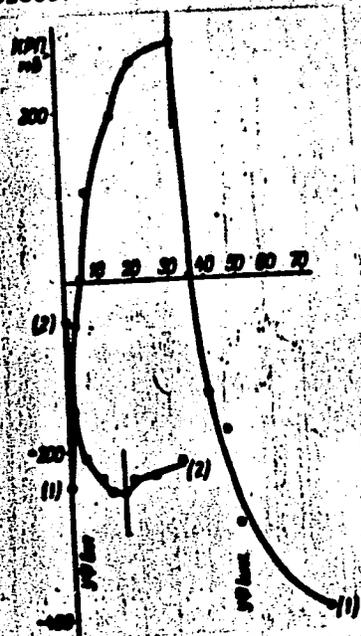


Fig. 3.

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L 52308-65 EWI(m)/EWP(i)/EWP(t)/EWP(b) JD

ACCESSION NR: AP5008810

S/0080/65/038/003/0575/0579

AUTHOR: Pamfilov, A. V.; Mel'nik, P. M.; Panchuk, O. E.

TITLE: Bright nickel plating from electrolytes with additives

SOURCE: Zhurnal prikladnoy khimii, v. 38, no. 3, 1965, 575-579

TOPIC TAGS: nickel plating, electroplating, colloid

ABSTRACT: The effect which sulfur-containing and heterocyclic additives in nickel plating electrolytes have on the brightness and mechanical properties of nickel platings was studied. Composition of the electrolyte (in g/l) was: $\text{NiSO}_4 \cdot 7\text{H}_2\text{O}$ --200, $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ --15, H_3PO_3 --30. The specimens were mechanically polished and cathodically degreased. The plating thickness was 10 microns. The pH of the electrolyte was controlled potentiometrically. The process of electroplating was carried out isothermally within $\pm 0.2^\circ\text{C}$. Addition of 0.025 to 1 gram per liter of sulfur-containing compounds such as: chloramine B, and Na-salts of 2,6- and 2,7-disulfonaphthenic acids along with such heterocyclic compounds as: pyridine, quinoline, and quinaldine produces very bright nickel platings directly from the

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L 52308-65

ACCESSION NR: AP5008810

electrolyzers. The platings also show satisfactory mechanical properties. Such platings were obtained at 0.5 to 7.5 a/100 cm², pH of the electrolyte 2 to 5, and temperature range of 25 to 55°C. The brightness improvement due to heterocyclic and sulfur-containing additives is explained in terms of stabilization of the colloidal nickel sulfide aggregates and their adsorption on the growing nickel plating. Such a process leads to very bright coatings. Orig. art. has: 3 figures and 3 tables.

ASSOCIATION: Chernovitskiy gosudarstvennyy institut (Chernovtsy State Institute)

SUBMITTED: 04Mar63

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 004

LL
Card 2/2

PAMFILOV, A.V.; BOKHAN, I.I.; MAMIRASHVILI, Ya.S.

Effect of oxygen and water vapor on the photochemical reaction of
electron from titanium dioxide. Zh. Fiz. Khim. 1965, 39, 165-168.
(MIRA 16:5)

1. Chernovitskii, P. I. (1965) *ibid.*

MASTERS, J. S., ... PAUL ... A. ...
... A.7.

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PAMFILOV, A.V.; LOPUSHANSKAYA, A.I.; TRVTUL', Ya.Yu.

Ammonium tetrathiocyanodianiline chromate (III). Ukr. khim. zhur.
31 no.6:545-550 '65. (MIRA 18:7)

1. Chernovitskiy gosudarstvennyy universitet.

LOPUSHANSKAYA, A.I. (Chernovitsy); ZUYEVA, T.S. (Chernovitsy); PAMFILOVA, L.A.
(Chernovitsy); PAMFILOV, A.V. (Chernovitsy).

Absorption spectra of Cr(III) complexes. *Zhur. fiz. Khim.* 39 no. 1:
68-71 Ja '65 (MIRA 19:1)

1. Chernovitskiy universitet. Submitted January 29, 1964.

PAMFILOV, A.V.; IOPEK-HANSHAYA, A.I.; PAMFILOVA, L.A.

Polarography of green chromium acetate. Ukr.khim.zhur. 31
no.5:465-478 1968. (MIRA 12:17)

1. Chernovitskiy gosudarstvennyy universitet. Submitted
Jan. 21, 1968.

PAMFILOW, A. W.

"Sur la morphologie des pigments. Communication IV". Pamfilow, A. W. et Fedorowa, O. S.
(p. 645)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1936, Vol. 6, No. 5

PAMFILOW, A.W.

"Spectres d'adsorption des solutions de iode. Communication II". Pamfilow, A.W. et Teiss, R.W. (p. 588)

SO: Journal of General Chemistry. (Zhurnal Obshchei Khimii) 1936, Vol. 6, No. 4.

PAMFILOW, A.W.

"Sur la chimie du titane. Communication III". Pamfilow, A.W. et Standel, E.G. (p.300)

SO: Journal of General Chemistry. (Zhurnal Obshchei Khimii) 1936, Vol. 6, No. 2

PAMIFILOV, A. W.

"Sur la chimie du titane. VII. Sur la thermodynamique de la reaction de chloruration."
I. N. Godnev et A. W. Pamifilov. (p. 1264)

SO: Journal of General Chemistry (Zhurnal Oshchei Khimii). 1937, Volume 7, No. 8.

PAMFILOV, A. W.

"Sur la theorie du changement de la viscosite des sols de nitrocellulose." Morozov, A. A. et
Pamfilov, A. W. (p. 2154)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii). 1957, Volume 7, No. 10.

PAMFILOW, A. W.

"Sur la chimie du titane. Communication VI." Pamfilow, A. W. et Standell, E. G. (p. 258)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii). 1937, Volume 7, No. 1.

PAMFILOW, A. W.

"Chloruration de l'oxyde de fer en presence du charbon". Pamfilow, A. W. et Standell, E. C.
(p. 1639)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1936, Vol. 6, No. 11

S/103/62/023/006/011/012
D230/D308

16 8000

AUTHOR:

Parfilov, R.K. (Moscow)

TITLE:

Choice of selsyn type for remote angle transmission by transformers

ABSTRACT:

Автоматика и телемеханика, v. 25, no. 6, 1962, 818-829

TEXT:

Optimal functions of self- and mutual-inductance are established for a single-type selsyn transformer circuit for which errors in angle transmission and the reactive moments on selsyn rotors disappear. When the impedance of the selsyn windings is independent of the rotor position, the open-circuit receiver winding has no reactive moment on its rotor, irrespective of the number of synchronization windings and any mutual-inductance function of the primary and secondary selsyn windings. If there is no reactive moment on the transmitter rotor, this function should be sinusoidal and should have a period $T_f = 2\pi/\nu$, where ν is an odd positive number. For an error-free angle transmission the function, for

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D230/D308

Choice of selsyn type ...

$n = 3$, should be a sinusoid with a period T_f ; for $n = 2$, this function should be even and symmetrical with respect to the zero value and identical for both the transmitter and the receiver. When the mutual-inductance function contains also a fixed component, and the variable component satisfies the above requirements, there is for $n = 3$ a fixed angular error which can be monitored; for $n = 2$ there are also errors and reaction moments depending on the angular position of the rotor. Absence of the fixed component appears to be the necessary condition for using a selsyn with $n = 2$. When the impedance of the synchronization windings is dependent on the rotor position, certain conditions should be fulfilled in addition to the above requirements, in order to ensure error-free transmission: the variable component function of the self- and mutual-inductance points; the variable components scale coefficients of these windings should be the same for transmitter and receiver. An arrangement of two mutually-perpendicular windings, instead of three star-connected windings, increases the angle transmission accuracy and reduces the reactive moment of the selsyn transformer circuit. Precision selsyn

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Choice of selsyn type ...

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transformer circuits should be constructed on selsyns having pairs of mutually-perpendicular synchronization windings. For $n = 2$, the requisite mutual-inductance function can be obtained by using simple lumped windings instead of sinusoidally-distributed windings. Identical requirements for the transmitter and the receiver functions are essential in this case. There are 3 figures.

SUBMITTED: November 24, 1961

Card 3/3

PAMPULOV R.K., kand. tekhn. nauk (Moskva)

Dynamic operating modes of phase converters and rotary
transformers. Elektrichestvo no.10 3 10 0 1964.

(MIRA 17 12

... Z, N. PAMFILOV, V.

...-duty fuel pumps. ... (MIRA ...)

... Moskovskiy karbyurator...

PAMFILOV, V.V.

Method for recording the formation of wood samples in impact tests.
Zav.lab. 22 no.3:333-334 '56. (MLRA 10:5)

1. Bryanskiy lesokhozyaystvennyy institut.
(Wood--Testing) (Testing machines)

PAMFILOV, Vsevolod Vasil'yevich, kand. sel'khoz. nauk;
ROMARENKO, L.A., kand. tekhn. nauk, otv. red.

[Effect of impact loads on the structure and mechanical
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BARANSKIY, A.D.; PAMFILOVA, E.A.

Sulfur in the products of thermal decomposition of coals rich in sulfur of the Irkutsk Basin. Izv. Fiz.-khim. nauch.-issl. inst. Irk. un. 5 no.1:28-35 '61. (MIRA 16:8)

(Irkutsk Basin--Coal--Analysis)
(Sulfur--Analysis)

MELENT'YEV B.N.; IVANENKO, V.V.; PAMFILOVA, L.A.

Solubility of zinc sulfide in aqueous solutions. Dokl. AN
SSSR 153 no.1:184-186 N '63. (MIRA 17:1)

1. Institut geologii rudnykh mestorozhdeniy, petrografii,
mineralogii i geokhimii AN SSSR. Predstavleno akademikom
D.S. Korzhinskim.

MELENT'YEV B.N.; IVANENKO, V.V.; PAMFILOVA, L.A.

Solubility of zinc sulfide in aqueous solutions. Dokl. AN
SSSR 153 no.1:184-186 N '63. (MIRA 17:1)

1. Institut geologii rudnykh mestorozhdeniy, petrografii,
mineralogii i geokhimii AN SSSR. Predstavleno akademikom
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IVANENKO, V.V.; KOLODIN, G.N.; MELENT'YEV, B.N.; PAMFILOVA, L.A.

Apparatus for determining the solubility of radioactive substances
at elevated temperatures and pressures. Atom. energ. 15 no.5:426-
428 N '63. (MIRA 16:14)

PAMFILOV, A.V.; LOPUCHANSKAYA, A.I.; PAMFILOVA, L.A.

Solarography of green chromium acetate. Ukr.khim.zhur. 31
no.5:465-468 1965. (MIRA 18:12)

1. Chernovitskiy gosudarstvennyy universitet. Submitted
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varying acidity. Dokl. AN SSSR 161 no.3:687-690 Mr '65.

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1. Institut geologii rudnykh mestorozhdeniy, petrografii,
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LOPUSHANSKAYA, A.I. (Chernovitsy); ZUYEVA, T.S. (Chernovitsy); PAMFILOVA, L.A.
(Chernovitsy); PAMFILOV, A.V. (Chernovitsy).

Absorption spectra of Cr(III) complexes. Zhur. fiz. khim. 39:1:1
68-71 Ja '65 (MIRA 19:1)

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Petrologic studies on the effusive rocks in the area Ilidza-Kalinovik
(Bosnia). Note 2. Geol glas BiH no.6:45-59 '62.

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Inclusions of peridotite rocks in the gabbro massif of the Sost'vin
River near Zavidovo, Bosnia. Geol. gors BiH 9:5-14 1964.

1. Submitted January 23, 1964.

Pamir Jakob

An occurrence of gypsum and anhydrite in the upper reaches of the Rama and Doljaska rivers (Dobral, Jakob Pamir, Glinje, Sarajevo, Yugoslavia). *Geol. Glasnik (Sarajevo)* 1954, 107-97 (Pub. 105) (English summary). The extensive deposits of Lower Triassic age form a no. of layers of about 20-40 cm., which are interspersed with very thin (a few mm.) sheets of a fetid black bituminous clay. This diminishes the economic value of the deposits. The whole series is, in places, up to 100 m. thick. Hand-picked specimens gave gypsum 15-74, anhydrite 24-81, and NaCl about 1%.

S. Mihotic

EE

11

PAMIC, Jakob

The contact metamorphic phenomena in the Triassic sediments south of Prozor (Bosnia and Hercegovina); with 1 illustration in the text and 2 plates. Geol vjes Hrv 13:197-212 '59 (published '60).

(ZEM 10:4)

1. Institute of Engineering Geology, Technical Faculty, Sarajevo, V. Miskina 11.

(Bosnia and Hercegovina--Geology) (Rocks)

PAMIS, 1946

The following information was obtained from the files of
the National Security Council, dated 11/11/46.

1. Institute of Education, University of the Pacific,
Architectural and Urban Planning Department.

PAMIC, Jakob; JURIC, Marijan

Development of the Triassic in the area south of Jajce. Geol glas
BiH no.6:107-110 '62.

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(Sarajevo) (for Juric).

PAMIC, Jakob

Triassic volcanic rocks of the Cevljanovici region, and a short outline of the Triassic volcanism in the Borovica-Veres-Cevljanovici zone. Geol glas BiH 7:9-20 '63.

RUMANIA

PAMIR, M., Eng [affiliation not given]

"Congealment in Mining."

Bucharest, Stiinta si Tehnica, Vol 15, No 7, Jul 63, pp 8-9, 15.

Abstract: Describes a technique for mining coal, especially lignite, that is under strata of aquiferous sand. The technique involves the congealing of the sandy strata and was used for the first time at the Schitu-Golesti coal basin. The congealment is usually done with liquid ammonia or liquid carbon dioxide as refrigerant gases; the size of the refrigerating installations depends on the depth and size of the mining area and the expected refrigerating period. The method is 2 to 4 times more costly than regular mining.

Includes 3 illustrations.

1/1

PAMIR, M., ing.

Mining works at 1700°.. 2000°C St si Teh Bus 15 no.9:13 S '63

USSR/Diseases of Farm Animals. Diseases Caused by Viruses and Rickettsiae R

Abs Jour: Ref Zhur-Biol., No 9, 1958, 40658.

Author : Pankov, V. A. Bezprozvanny, R. K., Narskiy, S. V.,
Terebun, N. Ye.

Inst :
Title : Infectious Hepatitis in Dogs.

Orig Pub: Veterinariya, 1957, No 8, 39-44.

Abstract: Endoecy of infectious hepatitis in a service dog nursery was observed by the authors. Mainly, puppies of the ages from two to five months took sick, pre-dominantly during the spring and fall seasons. In most of the cases the disease proceeded benignantly, with the exception of the still sucking puppies who all died within a few days without distinct clinical

Card : 1/3

USSR/Diseases of Farm Animals. Diseases Caused by Viruses
and Rickettsiae.

Abs Jour: Ref Zhur-Biol., No 9, 1958, 40658.

data being available. The basic symptoms of the disease were rise in temperature, tonsillitis sometimes accompanied by throat edema, labored breathing with severe hoarseness; some of the puppies vomitted in the later stages of the disease, developed keratites, diarrhea mixed with blood at times, had severe pain in the lower abdomen which was revealed by palpation. Some of the animals showed the effects of excitation. In a hyperacute course of the disease, death ensued a few hours after appearance of clinical symptoms; in acute cases the disease lasted three to seven days. Usually, up to 10 percent of the animals died. Morphological examination revealed changes characteristic of infectious hepatitis in dogs.

Card : 2/3

36

USSR/Diseases of Farm Animals. Diseases Caused by Viruses R
and Rickettsiae

Abs Jour: Ref Zhur-Biol., No 9, 1958, 40658.

Bacteriological examination revealed the presence of a microflora, but without etiological significance. The diseased puppies were treated with penicillin, sulfamide preparations and by general therapeutic methods. Keratites disappeared most of the time without medical interference. Improvement of feeding and keeping helped to reduce the number of afflicted cases and assisted in furthering a benignant course of the enzooties.

Card : 3/3

PAMLENYI, Ervin (Budapest)

Development of Hungarian historiography in the past decade. Magyar tud
67 no.5/6:358-365 My-Je '60. (EEAI 9:9)
(Hungary--History)

PAMLENYI, Ervin

The thought of Saint Stephen. Elet tud 17 no.48:1507-1510 2 D '62.

PAMLENYI, Istvan, dr.

BOIROGY, Gyorgy, dr.; PAMLENYI, Istvan, dr.

On the auricular sound. Gyermekgyógyászat 5 no.9:267-272 Sept 54.

1. A Budapest Fovaros Tanacsá Kozponti Iskolai Szivbeteggondoso
Intezet kozlemenye (Intezeti igazgato: Flencsner Sandor, dr.)
(CARDIAC MURMURS AND SOUNDS)
auric. sound)

PAMPE, V.E.

Indications for irradiation of the ovary in cancer of the mammary
gland. Vopr.klin.lech.slok. novoobraz., Riga 1:156-159 1953

(BREAST, neoplasms
ther., irradiation of ovary

PAMPE, V.E.

Methods of hormone therapy in breast cancer. Vopr.klin.lech.zlok.
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(BREAST, neoplasms
ther., hormones)

(HORMONES, ther. use
cancer of breast)

SOPIL'NYAK, M.G.; PAMPE, V.E., glavnyy vrach.

Results of short focus X-ray therapy of pre-cancerous changes in the lower
lip. Vest.rent.i rad. no.3:59-62 My-Je '53. (MLRA 6:8)

1. Respublikanskiy onkologicheskii dispanser Ministerstva zdravookhraneniya
Latviyskoy SSR. (Lips--Cancer) (X-rays--Therapeutic use)

PLEKHANOV, I.P.; PAMPEL', S.V.; PETROVSKAYA, Ye.K., redaktor; MANINA, M.P.,
tekhnicheskii redaktor

[Individual instruction in automobile driving] Individual'noe
obuchenie vozhdeniiu avtomobilia. Moskva, Gos.izd-vo "Fizkul'tura
i sport," 1955. 94 p. (MLRA 9:2)
(Automobile drivers)

PLEKHANOV, Ivan Petrovich; PAMPEL', Sergey Vladimirovich; LESNYAKOV,
F.I., red.; DONSKAYA, G.D., tekhn. red.

[Diesel motortrucks; driver's manual] Dizel'nye avtomobili; po-
sobie shoferu. Izd.3., perer. Moskva, Avtotransizdat, 1962. 130 p.
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FISCHBEIN, E.; PAMPU, F.; BADOI, Al.

Utilization of some memorization activities in the frame of
mixed tests for fatigue determination. Rev psinologie 10 no. 2:
105-114 '64.

CA

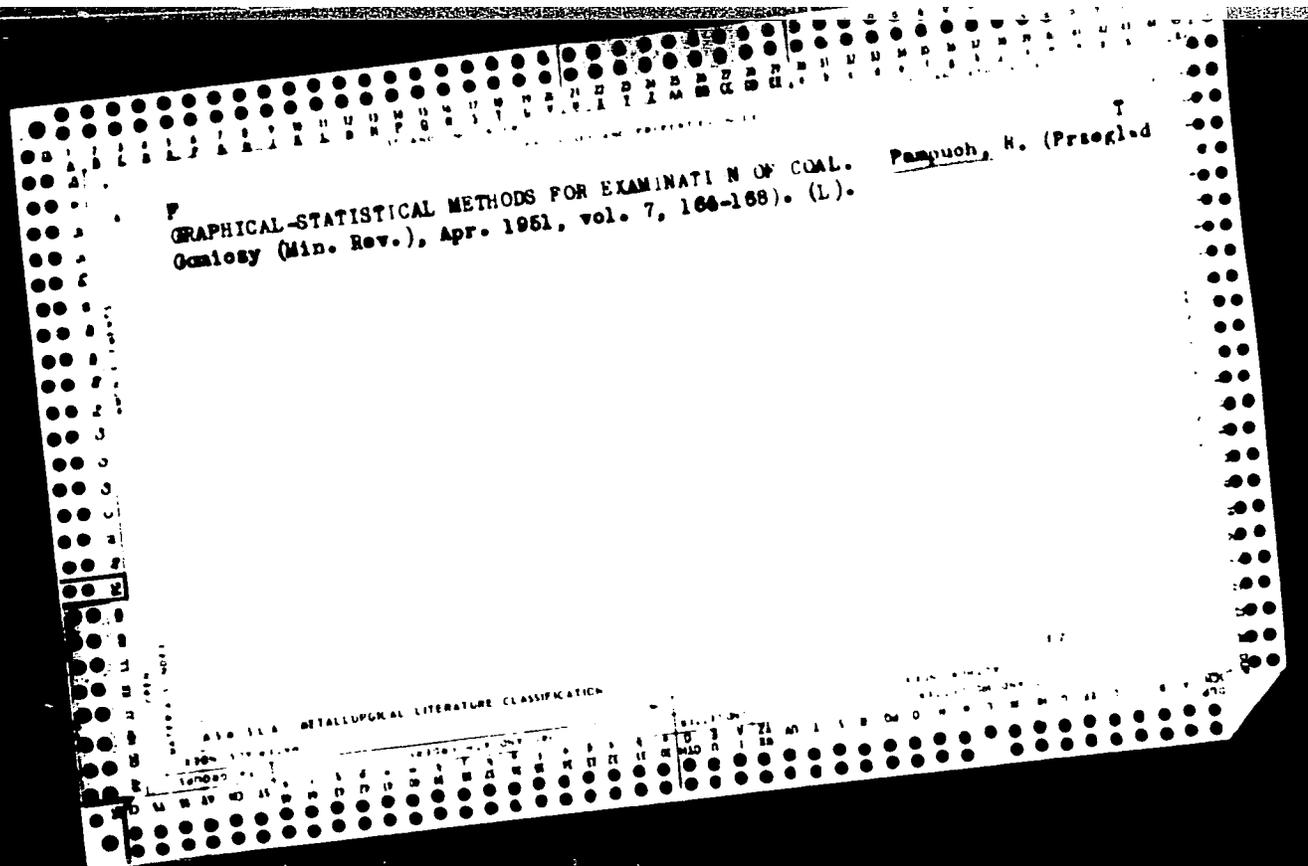
The thermal decomposition temperature of coals. J. Nadrzakiewicz and R. Pasmuch (Zaklad Chem. Przemobki Wegla, Bialskopirze). *Prace Glownego Inst. Gorniczo (Katowice)*, *Komun.* No. 79, 16 pp. (1931) (English summary) -- Statistical analysis of 51 tests on 15 coals of various rank and on 9 partly hydrogenated coals established that volatile-matter content is inversely proportional to thermal decomps. temp., with a correlation coeff. $r = -0.841$. A statistical technique, control cards, was used for estimating the decomps. temp. Exams. of the data led to the conclusion that the tested coals could be sep'd. into 2 groups: (1) flame-coals and ortho-coking coals, and (2) lean-coals and anthracite-coals. The thermal stability of the 1st group probably depends on the polar-atom (O, S, N) content, since thermal stability is an inverse function of polar-atom content. When the polar-atom content was less than about 5%, all types of tested coals showed high thermal stabilities. The high thermal stabilities of lean and anthracite coals may also be attributed to differences in structure. A formula is given for calcn. of thermal stability from the ultimate analysis

W. R. Hall

F

3000. THERMAL DECOMPOSITION TYPENAVINE OF COALS. Nadezhdin, J. and Panyuch, K. (Katonica: Proce Glow. Inst. Gern. (Proc. Chief Inst. Min.), 1951, Korunk. 79, 15pp.). A statistical analysis is given of 51 tests on 15 coals of various rank and on 9 partly hydrogenated coals. Volatile matter is inversely proportional to the thermal decomposition temperature, with a correlation coefficient $r = -0.8141$. A statistical technique (control cards) was used for estimating the decomposition temperature. The examination of data obtained led to the hypothesis that at least two groups may be distinguished in the coals tested. Coals running from flame to orthocoking belong to the first; lean and anthracite coals to the second group. The thermal stability of the first group probably depends on the polar atom content (P.A.M.) of these coals. The higher the content the lower the thermal stability of a given coal. With the decrease of the total content of polar atoms to about 5%, all types of coals tested show a marked increase in thermal stability. High thermal stability of lean and anthracite coals may be due to the different structure of these coals. A formula was given for calculation of thermal stability of coals based on their ultimate analysis. (U).

RUSS. HIGH HYDROGENATION OF COALS WITH COAL WAXES
(Nat. Acad. Sci. USSR, Inst. Geol. (Moscow, U.S.S.R.), 1950, Kuznetsov, G., 1951). Four samples of water-soluble wax were
subjected to the action of hydrogen at 100-120°C. Initial pressure
at 1.0 to 4.0 MPa for 2 to 6 h. The wax content had 50 to 80% of the
acted as a substitute for hydrogen in the hydrogenation. The results
of 10 to 20% water the changes in physico-chemical properties of the coal
were found to be in proportion to the hydrogen content of the wax used.
Optimum temperatures were somewhat lower than with pure hydrogen. No
catalysts were used. After hydrogenation the coals were tested by
Sapozhnikov's dilatometric method and classified as medium-kinetic coals.
(L).



CA

21

Properties of coals and their colloidal structure. Roman
Pampuch. *Practical Chemistry* 6, 572-6 (1951). A review
with 52 references. Bruno C. Metzner

190

PAMPUGH, R.

Fuel Abstracts
Vol. 14 No. 4
October 1963
Special Fuel,
Liquid Fuels,
Other Abstracts

ADV. RECENT DEVELOPMENT OF COAL HYDROGENATION PROCESSES.
Pamugh, R. *Hydro. Carb. Chem. Ind.*, 1962, vol. 8, 150-159,
150-159. ~~150-159. 150-159.~~ U.S.A.

PAMPUCH, R.

"The Structure Of Coal In The Light Of X-Ray Analysis" p. 111. (Przegląd Gorniczy,
Vol. 9, no. 3, Mar. 1953, Katowice)

SO: Monthly List of East European Accessions, Vol. 3, No. 2, February, 1954, 1959, Uncl.

PAMPUCH, R.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Fuels and Carbonisation Products

Initial internal decomposition temperature as a characteristic feature of coals. J. Nadziakiewicz and R. Pampuch (Zaklad. Chem. Przem. Wroclaw, Reaktor. Przem. Wroclaw, *Prace Zakladu Inst. Chem. Wroclaw*, No. 79, 15 pp. (1951) (English summary).—Statistical analysis of 51 tests on 15 coals of various ranks and on 9 partly hydrogenated coals established that the content of volatile matter is inversely proportional to the thermal decompn. temp. (I) with a correlation coeff. = -0.841. Examin. of obtained data led to the assumption that at least 2 groups can be distinguished: coals ranging from flame- to orthocoking type belong to the 1st and lean and anthracite coals to the 2nd group. Thermal stability (II) of the 1st group depends probably on the content of polar atoms (O, S, and N) in the coals. The higher their content the lower is II. With the decrease of the total content of polar atoms to about 5%, all ranks of coals show a marked increase in II. High II of the 2nd group may be also due to the different structures of the coals. Bangham's formula (*C.A.* 39, 1270⁹) was modified: $L = [(-90 \times 2 \times \lambda C/3 \times 12) + (14 \times 4(1 - \lambda)C/12) + (45 \times 2 \times O/16)] / (-0.6 \times H/1)$, where $L =$ "decompn. no." representing II, C, O, and H are wt. %, and λ has values 0.6, 0.7, 0.8, and 0.95, depending whether C = 75-80, 80-85, 85-90, or 90-92%. In the above formula were introduced values of $-\Delta F$ for the following bonds: C-O, aliphatic C-H and C-C, and aromatic C-C. When I increases from 300 to 540°C. L increases linearly from 0 to 240. At the same time II increases. 25 references.

F. J. Hendel

9-16-54
AP

Handwritten: 77 AMPUEH, K

2141. INITIAL THERMAL DECOMPOSITION TEMPERATURE AS CHARACTERISTIC FEATURE OF COALS. *Michalskaya, L. and Puzik, B. (Kiev): Proc. Ukr. Inst. Chem. (Cover, Ukr. Inst. Chem.), 1960, 7, 159-161. In Chem. Abstr., 1961, vol. 54, 4825.* Statistical analysis of 51 tests on 15 coals of various ranks and on 9 partly hydrogenated coals established that the content of volatile matter is inversely proportional to the thermal decomposition temperature (T) with a correlation coefficient = -0.841. Examination of obtained data led to the conclusion that at least 3 groups can be distinguished: coals ranging from lignite to anthracite type belong to the 1st and 2nd and semianthracite coals to the 3rd group. Thermal stability (T) of the 1st group depends probably on the content of polar atoms (O, S, and N) in the coals. The higher their content the lower is T. With the decrease of the total content of polar atoms to about 5%, all ranks of coals show a certain increase in T. High T of the 2nd group may be also due to the different structure of the coals. Stephan's formula was modified: $L = \frac{(1.25 \times 2 \times \lambda \times 0.7 \times T) + (1.5 \times 4 \times 1 - \lambda \times 12) + (4.5 \times 2 \times 0.16)}{1 + (0.5 \times T/1)}$, where L = "decomposition number" representing T; C, O, and S are weight per cent, 80-85, 05-50, or 50-52%. In the above formula were introduced values of $\lambda = 1$ for the following series: C, O, aliphatic C, H and C, G, and aromatic C, G. When T increases from 300 to 510° C L increases linearly from 0 to 240. At the same time T increases.

①

Pampuch, R.

POLON

✓ Macromolecular structure of bituminous coals in the light of their swelling. (Roman Pampuch, *Górnictwo, Katowice, Górnictwo, Stalinogród, Póland*; *Przebieg Górnictwa* 11, 77-83(1955); cf. *Prace Górnictwa Inst. Górnictwa, Kom. No. 153(1954)*).—The investigations on swelling of coal in different liquids show that in their polymeric structure the side bonds contg. H bridges, which were formed during carbonization, play an important role in detg. the properties of the coal. The H bridges are formed between the functional polar groups like OH, CO₂H, and CO. The distances of the atoms kept by the strong main bonds is 1.2-1.6 Å., while the distances of the atoms kept by the loose side bonds is 2-3 times greater. Only liquids of a micromol. structure can diffuse into the internal part of the bituminous coal structure, thus causing its swelling. The swelling of a young bituminous coal having a low C content in benzene was 3.1, in bromobenzene 12.2, in 1,2-dichloroethane 18.0, in isocamyl acetate 28.7, in Et ether 19.8, in nitrobenzene 25.9, in fural 45.6, in 1,4-dioxane 48.8, in acetone 48.1, in benzaldehyde 54.1, in aniline 102.3, in 2-picoline 115.4, in pyridine 142.9, and in piperidine 136.9 vol. %. P thinks that the small increase in vol. by swelling in benzene is caused by a decrease in cohesion only in the contact spots of the nonpolar parts of the structure. Any addnl. increase in swelling in polar solvents must be caused by loosening the polar contacts, i.e., the H bridges. Benzaldehyde, which is a low-polar solvent, causes a small increase in vol. in flame coals having the lowest C content, while pyridine causes the highest increase in swelling in the older coals with higher C content. P. deduces that the latter coals contain a comparatively high no. of H bridges, while the coals with lower C content contain a small amt. of H bridges. P. J. H.

PAMPUCH, R.

1366. CORRELATION BETWEEN THE THICKNESS OF PLASTIC LAYER AND RATE OF
decomposition of the plastic layer. The thickness of the plastic layer is
determined by the rate of decomposition of the plastic layer. The
layer thickness is determined by the rate of decomposition of the plastic layer by
the thermal analysis method. The rate of decomposition is determined by the
indicates that a close correlation exists between thickness of l and the heat of
decomposition. C.A.

Pampuch, R.

Correlation between the thickness of plastic layer and heat of decomposition of coking coals. J. Nadziakiewicz and R. Pampuch. *Praca Inst. Mineralogii Hutnic. 8*, 71-8 (1956) (English summary).—Plasticity and the plastic layer (I) in unilaterally heated coals are discussed. Measurements taken by the thermographic method and the temp. gradient detd. in I, seem to indicate that a close correlation exists between thickness of I and the heat of decompn.
R. S. Lubomirski

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PAMPUCH, R.

fact

2261. THERMOGRAPHIC STUDY OF COALS AND BROWN COALS. Pampuch, R. and Rogz, B. [Prace Główn. Inst. Gór. (Contr. Chief Inst. Min., Stalinsgród), Ser. B, 1956, Kowalik, 183, 15pp.]. Experiments on coals and brown coals of different rank, cellulose, lignin, peat and xylite, showed that the thermographic method is suitable for investigating coking properties. It enabled the brown coals to be grouped according to rank and the coals according to their technological properties. The groups of brown coals corresponded with their geological ages and those of coals corresponded with their types in the Polish classification system. The coking process is divided into definite stages which occur within their characteristic temperature ranges. Some of the processes involved are functions of temperature only, others are also functions of time. Two decomposition reactions were distinguished in the 300 to 500°C temperature range, one from 320 to 400°C in low rank coals, and one from 400 to 480°C, connected with coal plasticity, which is most intense in coking and gas-coking coals. (L).

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1. 2 (leks, ...)

relations between the thickness of plastic layer of coal and its temperature of decomposition. quietly.

1. 2 (leks, ...)

Monthly Index of West ... Access ...
February 1958

PAMPUCH, R.; Nadziakiewicz, J.

Amelioration of coal by partial hydrogenation. p. 45.
(KOKS, SMOLA, GAZ. Vol. 1, no. 2, Apr./June 1956, Katowice, Poland)

SO: Monthly List of East European Accessions (EEL) LC. Vol. 6, no. 12, Dec. 1957.
Uncl.

7 4 0 0 0 0 0 4

Poland/Chemical Technology. Chemical Products and Their Application -- Treatment of solid mineral fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5446

Author: Nadziakiewicz, J., Pampuch, R.

Institution: Institute of the Ministry of Mining
Institute of Chemical Processing of Coal

Title: Correlation Between Depth of Plastic Layer of Coal and the Thermal Effect of Its Decomposition

Original

Publication: Prace Inst. Min-wa hutn., 1956, 8, No 2, 71-78; Koks, smola, gaz, 1956, 1, No 1, Biul. Inst., chem. przerobki wegla, 2-3

Abstract: In connection with an analysis of the causes of the formation of a plastic layer (PL) of different depth from different coal, and the determination of the correlation between temperature boundaries of PL and its depth, a hypothesis is advanced that the PL constitutes a heat barrier which limits the propagation of PL into the bulk of the coal during its unilateral heating under conditions of coking, and

Card 1/2

Poland/Chemical Technology. Chemical Products and Their Application -- Treatment of solid mineral fuels, I-12

Abst Journal: Referat Zhur - Khimiya, No 2, 1957, 5446

Abstract: that depth of PL is functionally correlated with the thermal effect of decomposition of the organic mass of the coal, since the transition of the coal to a plastic state is associated with the concurrently occurring chemical process, which consists of exothermic and endothermic reactions. To substantiate the hypothesis determinations were made of the enthalpy of the process of decomposition of the organic mass of coal specimens of different degree of metamorphism, in the temperature range of 350-500° (by means of the thermographic method), and also of changes in the temperature gradient within the PL of different coal; results of the determinations confirm the hypothesis which has been advanced. A discussion is presented of the conclusions that follow from the existence of a correlation between depth of PL of the coal and the thermal effect of its decomposition, and of the conformity of the proposed hypothesis to the current concepts of coal structure.

Card 2/2

COUNTRY : H
CATEGORY :

ABS. JOUR. : RZhKhim., No 17, 1959, No. 01486

AUTHOR :
INSTITUTE :
TITLE :

ORIG. PUB. :

ABSTRACT : compressed while applying 31.8 kbar pressure.
Cont'd Prior to making press., the powders were reclassified to grain size of 1 μ and 14 μ with the aid of a hydraulic classifier ("elutriator"). PF of the samples was investigated in oxidizing atmosphere of a Pt-electric resistance furnace (at a temperature rise rate of 7 $^{\circ}$ /min.). The furnace was equipped with a high temperature Leitz microscope, with the aid of which it was possible to conduct continuous visual observations of a sample's PF and to take photographs of a sample in the furnace every 30-50 $^{\circ}$ as the temperature rose.

Card: 2/4

H - 19

PAMPUCH, R.

1/ Structural aspects of solid-phase sintering; especially of oxides. Roman Pampuch (Inst. Polym. Chem., Warsaw, Poland). *Journal Polym. Sci. A-2*, 11, 113-24, 1973 (in English).

F. bases his discussion on thermodynamic principles. From a practical viewpoint, F. prefers the definition of a conventional sintering temp., T_c , in which (under suitable expt. conditions) a sudden decrease in dimensions of compacted cube-shaped samples is observed, e.g., in a Leitz heating microscope. Thus, a simple relation between T_c and T_p (threshold temp. of sintering) can be proposed. The oxide powders in the expts. were very carefully graded. The observed sintering temps. appear rather low in comparison with those temps. required for a dense structure. The expt. oxides were: α - Al_2O_3 , BeO , Bi_2O_3 , CaO , CaO , Cr_2O_3 , CuO , α - Fe_2O_3 , MgO , NiO , TiO_2 , ThO_2 , ZnO , and ZrO_2 . The T_c data are tabulated for loose powders of 6- and 10- μ grain sizes, and in pressed samples. By applying the Gibbs-Helmholtz equation to the change of the surface energy of the given oxide system, and by assuming that only the changes of the potential energy are concerned in interactions of a given ion or atom with its nearest neighbors, a simple equation is derived for $T_c = -[1 - C(\gamma_s/\gamma_m)]/\gamma_m \Delta T$ as a function of the temp. coeff. of the molar surface energy, $\delta\gamma_s/\delta T$ (about -0.1 erg/cm²·K), and of the surface energy, γ_m , for the threshold temp., with $\gamma_s/\gamma_m = \text{const.}$ (about 0.85). The calc'd. and observed temps. for the threshold and sintering phenomenon are within the range predicted by the theory (between 900° and 1800°K.). Because of different degrees of compaction in the samples, different particle sizes, etc., an empirical proportionality factor, k , must be introduced into the equation to determine T_c . It is expected that the higher the surface energy of the cryst. oxide, the higher T_c . For similar expt. conditions a linear relation should exist between T_c and the factor $-\gamma_m (\delta\gamma_s/\delta T)$ which is confirmed by the expt. data (with the

exception of α - Al_2O_3 , the surface energy of which is rather uncertain). Small particle sizes and increased compaction pressure reduce the differences in the sinterability of the oxides. In addition, however, structural factors are important. The ratio T_c/T_p (fusion temp.) should be proportional to the change in the no. (coordination) of the neighbors of a given atom in the surface, compared with that in the bulk. The more this no. in the surface deviates from that in the bulk, the greater should be the sinterability. For the purely ionic oxides the assumptions are well fulfilled for NaCl, wurtzite, fluorite, and rutile type structures. The more covalent, however, the bonding mechanism the lower is the sinterability. A graph with the electronegativity difference (Pauling) in the M-O bonds as the abscissa and the log ratio T_c/T_p as the ordinate shows linear relations for the groups of the R_2O structures, the rutile type. A good example of the effects of covalency, combined with a high entropy change in melting, is seen in Cr_2O_3 which has a low sinterability. Also for SiC a similar discussion is possible. This is also in agreement with the scale of increasing T_p , as functions of increasing covalency of bonding, and decreasing diffusion rates. There is, however, no relation to deformability or volatility. Structural O deficiency, e.g., in NiO and ZnO, causes increased sintering temps. in comparison with MgO and CaO. Threshold temps. of solid-state reactions may follow similar rules as the sinterability. For the special series of the Be-O; Sr-O; Ca-O bonds the electronegativity are indeed 2.6; 2.8; 2.5, resp. Finally, the addition of foreign oxides may influence the sinterability in a regular way, as seen in a 1st attempt with BeO sintering in 4- μ and 10- μ fractions (better observed in the latter). W. Klotz